201-16677B

Substance Group:	Isooctadecanoic acid reaction product with TEPA CAS # 68784-17-8
Summary prepared by:	Petroleum Additives Panel Health & Environmental Regulatory Task Group American Chemistry Council
Date of Last Update:	January 30, 2008
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1.0 PHYSICAL-CHEMICAL DATA

1.1 Octanol/Water Partition Coefficent

Robust Summary Group 9: OCT/WATER-1

Test Substance	
CAS #	68784-17-8
Chemical Name	Isooctadecanoic acid reaction.prod.with TEPA
Remarks	Purity: 100%
Method	
Method/Guideline followed	OPPTS 830.7570, Partition Coefficient (n-Octanol/Water), Estimation by Liquid Chromatography, This method is based on procedures presented in the OECD Guideline for the Testing of Chemicals, 117: Partition Coefficient (n-octanol/water), High Performance Liquid Chromatography (HPLC) Method; TSCA Title 40 of the Code of Federal Regulations, Part 796, Section 1570: Partition Coefficient (n-Octanol/Water) – Estimation by Liquid Chromatography and Council of the European Communities Directive 92/69/EEC Annex V, Method A.8
Test Type	Partition Coefficient (n-octanol/water), High Performance Liquid Chromatography (HPLC) Method
GLP	Yes
Year (Study Performed)	2006
Log P_{ow} Reference Standards	Acetanilide: Purity: 99.91%, 50 µg/L, Guideline reported log P_{ow} = 1.0 Toluene, Purity: 99.94%, 100 µg/L, Guideline reported log P_{ow} = 2.7 Naphthalene: Purity: 99%, 24.6 µg/L, Guideline reported log P_{ow} = 3.6 Phenanthrene: Purity: 100%, 25 µg/L, Guideline reported log P_{ow} = 4.5 2-Nitrophenol: Purity: 99.3%, 50 µg/L, Guideline reported log P_{ow} = 1.8 DDT, Purity: 99.3%, 50 µg/L, Guideline reported log P_{ow} = 6.5
Dead Time Reference Standard	Thiourea, 99.5% 50µg/L, mean retention time 1.674 minutes
Calculations	Partition coefficient was determined from the capacity factor k′. The capacity factor (k′), was calculated for each of the test substance chromatographic components and each reference standard using the following equation: $k' = (tR - t0)/t0$ where tR was the retention time of the test substance or reference standard and t0 was the column dead time established with thiourea. A correlation graph of Log k′ versus Log Kow for the reference standards was plotted and fitted to a regression equation in the form y = mx + b. Log Kow for each component of the test substance was calculated by substituting the calculated logarithm of the capacity factor for each component into the linear regression equation for the calibration curve.
HPLC Conditions	Instrument: Hewlett-Packard Model 1090 High Performance Liquid

	Chromatograph (HPLC) with an Agilent Series 1100 Variable Wavelength (UV) Detector Column: YMC-Pack ODS-AM C18 (150 mm x 4.6 mm, 3-µm particle size) Stop Time: 25.0 minutes Flow Rate: 1.0 mL/minute Oven Temperature: 40°C Mobile Phase: Acetonitrile:25%; tetrahydrofuran 25%; formic acid/phosphoric acid in HPLC water 5% Injection Phase: 10 µL Primary Analytical Wavelength: 250 nm
Method Comments	Seven reference standards were analyzed for the purpose of generating a Log Kow calibration curve. A combined calibration stock solution of the reference standards was prepared by dissolving each in 100 mL of THF. A calibration standard solution was prepared from this stock solution by diluting 0.250 mL of the stock solution to 100 mL in THF. The combined reference standard gave a detector response for each reference standard of at least 900 milli-absorbance units for peak height. A stock solution of the test substance was prepared by accurately weighing 1.00 g of the test substance into a beaker. The test substance was then quantitatively transferred into a 100-mL volumetric flask. The stock solution was brought to volume using THF. This stock solution contained 10.0 mg/mL. The stock solution was ampulated in duplicate and analyzed by HPLC. Each of the duplicate injections (10.0 µL) of this solution gave a detector response of at least 100 milli-absorbance units for the peak height of the dominant peak. A combined reference standard solution comprised of seven reference standards was ampulated and injected in duplicate (once near the beginning and once near the end of the HPLC sequence). The retention time of the reference standard, thiourea, was used to determine the analytical column dead time (t0) for use in calculating capacity factors (k′) of the remaining reference standards and the test substance. The mean retention time of the duplicate thiourea standard injections was 1.589 minutes. Six additional reference standards contained in the combined reference standard solution were analyzed with the test substance. However, only four of these reference standards were used to generate the calibration curve. The acetanilide and 2-nitrophenol reference standards were excluded. Because of the use of a gradient elution and the low Kow values of these standards, the compounds did not exhibit the same chromatographic behavior as the remaining standards. The capacity factors of each the remaining standards were calculated based upon their retention times.

Results	The test substance was sequentially injected in duplicate. The test substance eluted as four broad peaks. The mean retention times of each peak region was as follows: 6.166 – 7.451 minutes (maximum peak height at 7.376 minutes), 8.093 – 9.659 minutes (maximum peak height at 9.269 minutes), 10.818 – 12.046 minutes (maximum peak height at 11.574 minutes) and 12.555 – 13.921 minutes (maximum peak height at 13.505 minutes. The capacity factors (k′) for the beginning, end and maximum of each region were then calculated based on the above retention time ranges. The corresponding mean partition coefficients (Log Kow) for the test substance were calculated to range from an 3.17 to an extrapolated value of 7.77.
Conclusions	Under the chromatographic conditions specified, the test substance eluted as four broad peaks. The corresponding mean partition coefficients (Log Kow) for the test substance were calculated as 3.17 – 4.32 (4.26 at maximum), 4.80 – 5.80 (5.57 at maximum), (6.42) – (7.00) ((6.79) at maximum) and (7.22) – (7.77) ((7.61) at maximum). The values in parentheses were extrapolated. Using the measured peak area for each calculated partition coefficient at the maximum peak height, the weighted mean Log Kow for the test substance was determined to be 6.34.
Data Quality	(1) Reliable without restriction.
References	Confidential business information, Wildlife International Project No.: 264C-108
Other	Updated: 11/25/2006

1.2 Water Solubility

Robust Summary Group 9: SOL-1

CAS No.	CAS# 68784-17-8
Test Substance Name	Isooctadecanoic acid reaction products with TEPA
Test Substance Purity	100%
Method/Guideline	Generator Column Method: based on procedures outlined in the U.S. EPA Product Properties Test Guidelines, OPPTS 830.7860 (1) and the OECD Guideline for the Testing of Chemicals, 105: Water Solubility.
GLP (Y/N)	Yes
Year	2006-2007
Remarks for Test Conditions	The water solubility of the test substance was determined at a temperature of 20 ± 0.1°C. The generator column was prepared for the definitive test by evaporating a solution of the test substance in tetrahydrofuran onto Chromosorb WHP support material followed by packing the coated support material into a clean column. The test consisted of generating an aqueous solute solution of the test substance in reagent water by pumping the water through the generator column packed with the solid support material coated with the test substance. The volume of each aqueous column elution sample collected was 5.00 mL. Samples were collected at the 1.0-mL/minute flow rate until an equilibrium concentration was reached, as defined by five consecutive column elution sample collections where the measured sample concentrations were within 30% of each other. Following this equilibrium a second confirmatory trial was performed at approximately half the initial flow rate, 0.5 mL/minute. Column elution samples were collected until five consecutive individual aqueous solute sample concentrations were within 30% of each other, and within 30% of the mean saturation concentration obtained with the first flow rate trial. Generator column effluent pumped at a known and fixed flow rate was directly collected into 5.00-mL volumetric flasks. A 1.00 mL aliquot of each sample was derivatized using 4-chloro-7-nitro-1,2,3-benzoxadiazole, a derivatization reagent commonly used for secondary amines. Concentrations of the test substance in the samples were determined by high performance liquid chromatography using an Agilent Model 1100/1200 high performance liquid chromatograph equipped with a gel-permeation column and a variable wavelength detector. The measured concentration of test substance in the saturated aqueous solute solution eluted from the column

	represented the water solubility at the test temperature.
Results	The temperature of the water bath remained constant at 20.0 ± 0.1°C throughout the experiment. The test substance eluted at approximately 11.2 minutes. However, the tailing portion of the peak could not be completely separated from the underivatized reagent. In order to offset this interference, only the front half of the peak for the test substance was integrated. Under the instrumental conditions presented, the mean water solubility for the test substance was 5.19± 0.783 mg/L (n = 10, CV = 15.1%). The percent difference in calculated solubility for column elution flow rates of 1.00 and 0.500 mL/min was 21.0%.
Value (mg/L) at temperature °C	5.19± 0.783 mg/L at 20.0 C.
Conclusions	The water solubility o the test substance was determined to be 5.19± 0.783 mg/L at 20.0 C.
Data Quality	(1) Reliable without restriction.
References	Confidential Business Information Wildlife International Project Number 264C-107 (2007)
Date	January 10, 2008

2.0 ENVIRONMENTAL FATE AND PATHWAYS

2.1 Theoretical Distribution (Fugacity Calculation)

Robust Summary Group 9: FUGACITY-1

<table>
<tr><td>Test Substance</td><td></td></tr>
<tr><td>CAS #</td><td>68784-17-8</td></tr>
<tr><td>Chemical Name</td><td>Isooctadecanoic acid reaction products with TEPA</td></tr>
<tr><td>Method</td><td></td></tr>
<tr><td>Method/Guideline followed</td><td>Level III Fugacity Model (EPIWIN version 3.12) as described in Mackay et al. 1996; Environ. Toxicol. Chem. 15(9): 1618-1626 and Environ. Toxicol. Chem. 15(9): 1627-1637); the Level III model incorporated into EPIWIN is a Syracuse Research Corporation adaptation of this methodology.</td></tr>
<tr><td>Test Type</td><td>Fugacity-based multimedia fate modeling</td></tr>
<tr><td>GLP</td><td>Not Applicable</td></tr>
<tr><td>Molecular Formula</td><td>C26 H57 N5 O1</td></tr>
<tr><td>Molecular weight</td><td>455.78</td></tr>
<tr><td>Results</td><td>Level III Fugacity Model Results:
<table>
<tr><td></td><td>Mass Amount (%)</td><td>Half-Life (Hours)</td><td>Emissions (kg/Hour)</td></tr>
<tr><td>Air</td><td>6.18×10^{-10}</td><td>0.801</td><td>1000</td></tr>
<tr><td>Water</td><td>9.81</td><td>900</td><td>1000</td></tr>
<tr><td>Soil</td><td>81.6</td><td>1.8×10^{3}</td><td>1000</td></tr>
<tr><td>Sediment</td><td>8.63</td><td>8.1×10^{3}</td><td>0</td></tr>
<tr><td></td><td></td><td></td><td></td></tr>
<tr><td>Persistence Time:</td><td colspan="3">2.01×10^{3} hours</td></tr>
</table></td></tr>
<tr><td>Data Quality</td><td>(2) Reliable with restriction. Restriction due to the fact that these results are based on modeling rather than actual testing.</td></tr>
<tr><td>References</td><td>June 26, 2006 Confidential Business Information</td></tr>
<tr><td>Other</td><td>Prepared: 1/8/2008</td></tr>
</table>

2.2 Biodegradation

Robust Summary 9- BIODEG-1

Test Substance	
CAS #	68784-17-8
Chemical Name	Isooctadecanoic acid reaction products with TEPA
Remarks	Test material purity - 95% active 5% HRLBO
Method	
Method/Guideline Followed	OECD 301B, Ready Biodegradability, Modified Sturm Test
Test Type (aerobic/anaerobic)	Aerobic
GLP (Y/N)	Y
Year (study performed)	1997
Contact time (units)	28 days
Test apparatus	Glass 4-liter Erlenmeyer flasks
Inoculum	Activated sewage sludge from a domestic wastewater treatment plant prepared with soil filtrate per test guideline. Three cultures/group were prepared. The final combined volume of test medium, test substance and inoculum in each test container was 3 liters. Solutions were continuously aerated with CO_2 free air. The test substance was incrementally added at concentrations of 4, 8 and 8 mg C/L on days 0, 7 and 11. On day 14 equal volumes of each culture were combined and the composite inoculum screened and homogenized. A standard plate count was performed on the inoculum. Plates were incubated at 20±3°C for approximately 48 hours.
Cultures/replicate	Three replicate test cultures, three replicate blank control cultures and three reference control cultures.
Temperature of incubation	20±3°C
Dosing procedure	Neat test chemical was gravimetrically added to glass cover slips, which were then added to culture medium in test vessels.
Study initiation	Test flasks provided with CO_2 free air and mixed with a magnetic stirrer. The CO_2 produced from the degradation of organic carbon sources within each test chamber was trapped as K_2CO_3 in 0.5 N KOH and measured using a carbon analyzer.
Sampling	Days 4, 8, 12, 15, 19, 22, 26, 28 and 29 (after acidification on day 28)
Concentration of test substance	10 mg C/L weighed directly onto tared glass slides and placed into each test substance flask.
Controls	Blank and positive controls used per guideline. Positive control was canola oil added to a control vessel at a loading of 10 mg C/L.
Analytical method	The CO_2 produced from the degradation of organic carbon sources within each test chamber was trapped as K_2CO_3 in 0.5 N KOH and measured using a carbon analyzer.

Study termination	On day 28 the pH of the content of each test flask was determined. The flasks were then acidified with 3 ml of concentrated hydrochloric acid to drive off inorganic carbonate. The chambers were aerated overnight and then the trapping solutions closest to the test chambers were analyzed for inorganic carbon.
Method of calculating biodegradation values	Percent biodegradation calculated as percent ratio of cumulative net carbon dioxide to theoretical carbon dioxide as determined from elemental analysis of test material.
Results	The test substance was not considered readily biodegradable under the criteria that requires 60% biodegradation within 28 days, achieved within 10 days of reaching 10% biodegradation. The CO_2 production from the reference chemical exceeded the 60% of theoretical necessary to consider the test valid.
Degradation %	Test substance: 5.0 + 1.6 % in 29days (Average final pH 6.92) Positive control substance: 88.3 + 2.9 % in 29days
Conclusions	The test substance was not readily biodegradable.
Data Quality	(1) Reliable without restriction.
References	Confidential business information
Other	Updated: 5/30/2003

3.0 ECOTOXICOLOGICAL DATA

3.1 Acute Toxicity to Fish

Robust Summary Group 9: FISH-1

Test Substance	
CAS #	68784-17-8
Chemical Name	Isooctadecanoic acid reaction products with TEPA
Remarks	Test material purity - 95% active 5% HRLBO
Method	
Method/Guideline followed	Test protocol followed US EPA Toxic Substances Control Act Test Guideline #797.1400 (1985), OECD Guideline for Testing of Chemicals #203, Fish Acute Toxicity Test (1984).
Test Type	Acute Toxicity to Fish (Static renewal test)
GLP (Y/N)	Y
Year (Study Performed)	1993
Species/Strain	Rainbow trout (*Oncorhynchus mykiss*)
Fish Number	30/concentration (10/replicate)
Fish Size	Average length 26-39 mm; Average weight 0.37 g
Analytical Monitoring	Total organic carbon (TOC) measurements of initial (0-h) test solutions and after one day on test (24-h) before renewal of fresh test solutions. Samples were assayed according to EPA Method 415.1
Nominal Test Substance Concentration Levels	Control, 1, 10, 100 and 1,000 mg/L WAF loading rates. (Range find study) Control and 1,000 mg/L WAF loading rates. (Main study)
Test Concentration Preparation	Individual water accommodated fractions (WAFs) were prepared for each test level and renewed daily. A measured weight of test material was added to a measured volume of dilution water (15-L) in a glass vessel (20-L) and stirred for 24 hours. Stirring accomplished using a magnetic stir bar. Mixing speed adjusted such that a vortex formed between 30 to 50% of the distance to the bottom. Following the mixing period, the test solutions were allowed to stand for 1 hour before the water phase was removed. The siphoned water phase (i.e., WAF) was used in the aquatic toxicity test.
Exposure Period	96 hours
Exposure Conditions	Static renewal test conditions.
Vehicle	None
Statistical Analysis	None required based on the results.
Dose Rangefinding Study	Yes
Test Chambers	20-liter glass aquaria containing 15 liters of test solution

Diluent Water	Dechlorinated well water adjusted to the appropriate hardness of 40 to 48 mg/L as $CaCO_3$. The water was passed through activated carbon, a particle filter, and then an ultraviolet sterilizer, and then it was stored in a polyethylene tank where it was aerated.
Diluent Water Chemistry	Conductivity 200 µohms/cm Dissolved Oxygen: 6.5-9.4 mg/L pH: 7.8 Hardness: 40 mg/L $CaCO_3$ Alkalinity: 7 mg/L $CaCO_3$
Photoperiod	16-h light per day using cool-white fluorescent lights with an intensity of 2 $uEin^{-1}/m-^{2}$.
Temperature Range	11.7-12.4^{o} C ^{O}C
Positive Control	No
Remarks field for test conditions	Pretreatment: none, fish held for a minimum of 14 days before testing. No feeding 48 hours prior to and during the test. All organisms were observed for mortality and the number of individuals exhibiting clinical signs of toxicity or abnormal behavior at 3, 24, 48, 72, and 96 hours after initiation of test material exposure.
Results	Range find study: All fish survived the completion of the 96-hour observation period. No undissolved test material was seen on the surface of the test vessels during the entire aquatic toxicity test. Main Study: The treated test chambers were slightly cloudy during the test. At 1000 mg/L one fish was dead at 72 hours. All of the remaining fish (29) survived the 96-hour exposure period. At 48 hours one fish exposed to the WAF was swimming erratically and gasping. No other effects were noted. Control fish were unremarkable. The 24, 48, 72 and 96 hour LC50s were >1000 mg/L WAF. The 96-hour NOEC was 1000 mg/L WAF. Analytical Monitoring: TOC levels were between none detected and 1 mg/L in the control and 2.0 mg/L at the 1,000 mg/L loading. TOC levels were not considered to be indicative of actual test material concentrations and results are therefore based on nominal loading rates. Statistical results: Statistical analysis of survival data was not warranted.
Conclusions	The 24, 48, 72 and 96 hour LC50s were >1000 mg/L WAF. The 96 hour NOEC was 1000 mg/L WAF
Data Quality	(1) Reliable without restriction.
References	Unpublished confidential business information
Other	Updated: 4/07/2003

3.2 Acute Toxicity to Aquatic Invertebrates (e.g. Daphnia)

Robust Summary Group 9: DAPHNIA-1

Test Substance	
CAS #	68784-17-8
Chemical Name	Isooctadecanoic acid reaction products with TEPA
Remarks	Purity – 95% active 5%HRLBO
Method	
Method/Guideline followed	Test protocol followed US EPA Toxic Substances Control Act Test Guideline #797.1300 (1985, 1987), OECD Guideline for Testing of Chemicals #202 Daphnia sp. Acute Immobilization Test and Reproduction Test (1984).
Test Type	Static renewal acute toxicity test
GLP (Y/N)	Y
Year (Study Performed)	1993
Species/Strain	*Daphnia magna*
Analytical Monitoring	Total organic carbon (TOC) measurements of initial (0-h) test solutions and at 24 hours post initiation of exposure.
Exposure Period (unit)	48 hours
Statistical methods	Statistical analysis of the survival data was performed using standard techniques. The binomial (24 hours) or probit (48 hours) method was used to calculate LC50 values. The NOEC, no observed effect concentration, was defined as the highest concentration tested at and below which there was no toxicant-related immobilization or physical and/or behavioral abnormalities.
Remarks field for test conditions (fill as applicable)	Juvenile daphnids less than 24-hours old were produced from laboratory in-house culture. Individual water accommodated fractions (WAFs) were prepared for each test level and renewed daily. A measured weight of test material was added to a measured volume of dilution water in a glass vessel and stirred for 24 hours. Stirring was accomplished using a Teflon coated magnetic stir bar. Following the mixing period, the test solutions were allowed to stand for 60 minutes before the water phase was gently siphoned from the mixing vessel into corresponding replicate test vessels (300 mL culture dishes containing 250 mL of test solution). Twenty daphnids, less than 24 hours old were distributed into each concentration (10 daphnids/replicate). At 24 hours the test solutions were replaced with newly prepared WAF and all surviving daphnids were carefully transferred into the corresponding test vessel. Daphnids were not fed during exposure. Control test chambers were handled in an identical fashion. Light cycles were maintained at 16-hour light per day with an intensity of 5 $uEin^{-1}m^{-2}$ at the surface of the culture solutions. Test solutions were maintained at 20 + 1 C. Dilution water was dechlorinated tap water adjusted to the approximate

	hardness of 160-180 mg/L as $CaCO_3$.
Test Concentrations	100, 170, 280, 460 and 770 mg/L WAF
RangeFinding Study	1, 10, 100 and 1000 mg/L WAF
Results	
Remarks	Water chemistry: Dissolved oxygen: 7.6 – 9.0 mg/L; pH: 8.1 - 8.9; conductivity: 540 – 610 µohms/cm. Total Organic Carbon measurements were 2 mg/L in the 100 and 770 mg/L test concentration solutions prestudy. Analysis of 24-hour test solutions resulted in measurements of 3 mg/L and 4 mg/L in the 100 and 770 mg/L test concentration solution. TOC analysis of the control solutions at 0 and 24 hours resulted in measurements of 1 mg/L and 3 mg/L respectively. Throughout the exposure period small suspended particles were present in each WAF treated test vessel. At least 90% survival occurred in all control test vessels and no control sub lethal effects were noted during the test. Based on observed mortality in the WAF treated groups, the 24-hour daphnid LC50 was 160 mg/L WAF and the 24-hour EC50 was 150 mg/L. The 48-hour LC50 and EC50 values were both 150 mg/L WAF. The 48 hour NOEC was 100 mg/L.
Conclusions	24-hour daphnid LC50 was 160 mg/L WAF and the 24-hour EC50 was 150 mg/L. The 48-hour LC50 and EC50 values were both 150 mg/L WAF. The 48 hour NOEC was 100 mg/L.
Data Quality	(1) Reliable without restriction.
References	Unpublished confidential business information
Other	Updated: 4/07/2003

3.3 Toxicity to Aquatic Plants (e.g. Algae)

Robust Summary Group 9: ALGAE-1

Test Substance	
CAS #	68784-17-8
Chemical Name	Isooctadecanoic acid reaction products with TEPA
Remarks	Test material purity not provided.
Method	
Method/Guideline followed	OECD Guideline for Testing of Chemicals #201 Alga, Growth Inhibition Test (1984).
Test Type	Static acute toxicity test (Water Accommodated Fraction- WAF)
GLP (Y/N)	Y
Year (Study Performed)	1993
Species/Strain	Freshwater algae, *Selenastrum capricornutum*
Number of cells/mL	10,000 cells/mL in three replicate cultures/test concentration.
Exposure period/duration	96 hours
Range find test	Yes
Analytical monitoring	Total organic carbon (TOC) measured at the beginning and end of the test according to EPA Method 415.1.
Statistical methods	Binominal/nonlinear interpolation method was used to calculate EC50 values. A parametric t test was used to calculate the no observed effect concentrations.
Remarks field for test conditions (fill as applicable)	Test Species: *Selenastrum capricornutum* cultures obtained from the university of Texas at Austin. Loading Concentrations: Range find Study: 1, 10, 100 and 1000 mg/L loading rate WAF. Main Study: 1, 2, 4, 8 and 16 mg/L loading rate WAF. Test System: The WAF was prepared only at the beginning of the test. A measured weight of test material was added to a measured volume of culture medium (10-L) in a glass vessel and stirred for 24 hours. Stirring accomplished using a magnetic stirrer. Mixing speed was adjusted such that the vortex extended from the surface to approximately 30% - 50% of the depth of the mixing vessel. Following the mixing period, the test solutions were allowed to stand for one hour. The WAF was removed from each concentration by siphoning. The siphoned water phase (i.e., WAF) was used for the aquatic toxicity test. Test Conditions: A static test was conducted; i.e., there was no daily renewal of test solution. Three 100-mL replicates per treatment, inoculum ~10,000 cells/mL. During the test all treatment and control flasks were randomly placed on an orbital shaker adjusted to approximately 100 cycles per minute under constant light (24 hours/day) for 96 hours. Cell densities were determined at 0, 24, 48, 72 and 96 hours. pH was determined at 0 and 96 hours. The target test temperature was 24.0^{o} C. The culture media was as

	specified in the guideline.
Results	During the study water quality data were as follows: pH: 7.6-10.9 TOC: None detected No observations were given concerning visual appearance of WAF or presence/absence of undissolved material. The control algae population grew well during the test, resulting in an average of 1,467,000 cells/mL in the control. The 24, 48, 72 and 96 hour EC50 values for algae exposed to the WAF of the test material ranged from 1.0 –1.3 mg/L based on the number of cells/mL and from 1.0 to 1.4 mg/mL based on average specific cell growth. The 72 and 96 hour EC50s were as follows: 72 hours 1.2 mg/L WAF (based on cells/ml) 72 hours 1.3 mg/L WAF (specific growth rate) 96 hours 1.3 mg/L WAF (based on cells/ml) 96 hours 1.4 mg/L WAF (specific growth rate) The 72 and 96 hour NOECs were as follows: 72 hours 1.0 mg/L WAF (based on cells/ml) 72 hours 1.0 mg/L WAF (specific growth rate) 96 hours 1.0 mg/L WAF (based on cells/ml) 96 hours 1.0 mg/L WAF (specific growth rate) The regrowth of inhibited cultures from the 2 mg/L WAF test level revealed that the effect at this concentration was algistatic. Control culture pH increased from 7.7 at 0 hour to 7.9 at 96 hours. This is consistent with the guideline. In the test cultures pH increased over the 96 hour test period following a concentration dependent pattern. Greater increases were observed at lower concentrations. Decreases in pH were observed at the three highest concentrations. This was attributed to a greater number of viable cells at lower concentrations with greater utilization of carbonates and bicarbonates from respiration.
Conclusions	The 24, 48, 72 and 96 hour EC50 values for algae exposed to the WAF of the test material ranged from 1.0 –1.3 mg/L based on the number of cells/mL and from 1.0 to 1.4 mg/mL based on average specific cell growth. The effect of the test material to the algae was algistatic.
Data Quality	(1) Reliable without restriction
References	Confidential business information.
Other	Updated: 4/07/2003

4.0 TOXICITY

4.1 Acute Toxicity

4.1.1 Acute Oral Toxicity

Robust Summary Group 9: ACUTE ORAL-1

Test Substance	
CAS #	CAS# 68784-17-8
Chemical Name	Isooctadecanoic acid reaction products with TEPA
Remarks	Test material dosed as received, purity 95% active 5%HRLBO
Method	
Method/Guideline followed	EPA FIFRA 81-1 (November 1982)
Test Type	Acute oral toxicity
GLP (Y/N)	Y
Year (Study Performed)	1985
Species/Strain	Rats/Sprague-Dawley strain
Sex	Male and Female
No. of animals/dose	5/sex
Vehicle	None
Route of administration	Oral (intragastric)
Dose level	5.0 g/kg
Dose volume	Not provided
Control group included	Yes
Remarks field for test conditions	A single dose of the undiluted test material was administered intragastrically to five fasted (over night) male and female rats at each treatment level. A control group consisting of 5 animals/sex was included. The animals were observed for signs of toxicity or behavioral changes frequently on the day of dosing and twice daily thereafter (once daily on weekends). Individual weights were recorded on the day of dosing, on days 2 and 7 and at termination. All animals were euthanized at the conclusion of the observation period. Gross autopsies were performed on all animals after 14 days. Abnormal tissues were evaluated microscopically.
Results	LD50 > 5.0 g/kg (males and females)
Remarks	No mortality was observed. Reduced food consumption was observed in one treated male 24 hours after dosing. No other signs of toxicity were observed. There were no significant treatment related necropsy findings in any of the animals. Bilateral dilated renal pelvis was observed in a treated male and female. Upon microscopic examination, moderate hydronephrosis with mild tubular regeneration was observed in the male and trace hydronephrosis was observed in the female. This is a common congenital finding observed in laboratory rats and was not associated with treatment.
Conclusions	The test article, when administered as received to male and female Sprague-Dawley rats, had an acute oral LD50 of > 5.0 g/kg (males and females.).
Data Quality	(1) Reliable without restriction.

References	Unpublished confidential business information
Other	Updated: 3/31/2003

4.1.2 Acute Dermal Toxicity

Robust Summary Group 9: ACUTE DERMAL-1

Test Substance	
CAS #	68784-17-8
Chemical Name	Isooctadecanoic acid reaction products with TEPA
Remarks	Test material purity – 95% active 5%HRLBO
Method	
Method/Guideline followed	OECD Guideline 402
Test Type	Acute dermal toxicity (Limit Test)
GLP (Y/N)	Y
Year (Study Performed)	1986
Species/Strain	Rabbits/New Zealand White
Sex	Male and female
No. of animals/sex/group	5
Vehicle	None
Route of administration	Dermal
Dose level	2 g/kg
Specific Gravity	Not provided
Control group included	Yes
Remarks field for test conditions	Approximately 24 hours prior to topical application of the test material, the hair of each animal was closely clipped. A single dose of 2 g/kg of the undiluted test material was administered dermally to five male and female animals. The test material was kept in contact with the skin for a period of 24 consecutive hours under a plastic sheet. Collars were used to prevent oral ingestion. After 24 hours, the remaining test material had hardened and could not be removed with mineral oil, acetone or ethanol. The test material remained on the animals until the skin to which the test material was adhered flaked away between days 7 and 14. The animals were observed for signs of toxicity or behavioral changes frequently on the day of dosing and twice daily thereafter (once daily on weekends). The skin at the application site was evaluated for irritation at 1, 7 and 14 days according to the Draize method. Individual weights were recorded on the day of dosing, on days 2 and 7 and at termination. All animals were euthanized at the conclusion of the observation period. Gross autopsies were performed on all animals after 14 days. Sections of skin from each animal and any abnormal tissues were evaluated microscopically.
Results	The test article, when administered dermally as received to 5 male and 5 female New Zealand white rabbits, had an acute dermal LD50 of greater than 2.0 g/kg. Moderate to severe dermal irritation was observed in the treated animals.
Remarks	No mortality was observed. Reduced food consumption was observed in four treated animals of each sex from day 1 to day 7. Body weights were

	unremarkable. Reddened nictitating membranes with yellow ocular discharge were observed in two females in the treated group. All treated animals were normal by Day 8. Reddened nictitating membranes with brown or yellow ocular discharge were observed in one control male from day 2 to day 8. After 24 hours, the remaining test material had hardened and could not be removed with mineral oil, acetone or ethanol. Skin irritation ranged from well defined to moderate erythema and edema in the treated animals. By day 7 the skin in the application site had thickened and cracked with severe erythema and eschars between the cracks. Between days 7 and 14 the skin and test material flaked away leaving normal appearing skin at the application site. Skin irritation on day 14 in the treated animals consisted of a pinpoint eschar and slight erythema with no edema. The only findings observed in the controls were attributed to the tape and possible scratching. Microscopic compound related lesions in the skin consisted of trace to mild hyperkeratosis, epidermal crusting, dermal inflammation and acanthosis. Findings in the control group were much more focal or multifocal rather than diffuse and did not occur in every rabbit.
Conclusions	The test article, when administered dermally as received to 5 male and 5 female New Zealand white rabbits, had an acute dermal LD50 of greater than 2.0 g/kg. Moderate to severe dermal irritation was observed in the treated animals.
Data Quality	(1) Reliable without restriction.
References	Unpublished confidential business information
Other	Updated: April 3, 2003

4.2 Repeated Dose Toxicity

Robust Summary Group 9: REPEAT DOSE-1

Test Substance	
CAS #	CAS# 68784-17-8
Chemical Name	Isooctadecanoic acid reaction products with TEPA
Remarks	Test material purity 100%
Method	
Method/Guideline followed	OECD 407
Test Type	28-day oral (gavage) toxicity study in rats
GLP (Y/N)	Yes
Year (Study Performed)	2006-2007
Species	Rat
Strain/Age	Crl:CD(SD) rats, approximately 38 days old at receipt
Route of administration	Oral (gavage)
Duration of test	28 days of treatment followed by a 14 day recovery period
Doses/concentration levels	0, 60, 250 and 1000 mg/kg/day
Dose Volume	5 mL/kg
Vehicle	Corn oil
Sex	Males and females
Exposure period	28 days
Frequency of treatment	Once daily, 7 days/week
Number of animals/sex/group	14/sex/group in the control and high dose groups, 7/sex/group in the low and mid dose groups.
Post exposure observation period	14 days (control and high dose groups)
Test Material Analysis	Stability, homogeneity and concentration
Statistical methods	Body weight, body weight change, food consumption, continuous functional observational battery, locomotor activity, clinical pathology and organ weight data were subjected to a parametric 1-way analysis of variance (ANOVA) to determine intergroup differences. If the ANOVA revealed statistically significant ($p<0.05$) intergroup variance, Dunnett's test was used to compare the test article-treated groups to the control group. Functional observational battery parameters that yielded scalar or descriptive data were analyzed using Fisher's Exact. Total and ambulatory locomotor activity counts were analyzed, by sex and session, with a repeated measure analysis of variance. Factors in the model included treatment group, time interval, and the interaction of time interval and treatment group. The monotonic dose response relationship was evaluated using sequential linear trend tests based on ordinal spacing of dose levels. The linear dose by time interaction was evaluated and, if significant at the 0.05 level, trend tests on treatment means were performed at the 0.05 level for each time interval. If the linear dose by time interaction was not significant, the trend test was conducted across the pooled time intervals of the entire session only. Nonmonotonic dose responses were evaluated

	whenever no significant linear trends were detected. Within the framework of the RANOVA, pairwise comparisons were made for each individual treated group with the control group through linear contrasts.
Results	
Remarks	All animals were observed twice daily for mortality and moribundity. Clinical examinations were performed daily, and detailed physical examinations were performed weekly. Individual body weights and food consumption were recorded weekly. Functional observational battery and locomotor activity data were recorded for 7 animals/sex/group prior to the initiation of dose administration and during study week 3. Clinical pathology evaluations (hematology, serum chemistry and urinalysis) were performed for all rats assigned to the primary (study week 4) and recovery (study week 6) necropsies. Complete necropsies were conducted on all animals, and selected organs were weighed. Selected tissues were examined microscopically from all animals in the control and 1000 mg/kg/day groups. Gross lesions were examined from all animals in the 60 and 250 mg/kg/day groups. The low dose animals were underdosed by up to 80% during the first two weeks of dosing and by up to 22.2% during the last two weeks of dosing. The mid dose animals were under-dosed by up to 50% during the first two weeks of dosing and were dosed at the protocol-specified concentration during the last two weeks of dosing. The 1000 mg/kg/day group was dosed with the protocol-specified dosages of test article for the entire 28 days of dosing. All animals survived to the scheduled necropsies. There were no test article-related clinical findings or effects on body weight, food consumption, functional observational battery evaluations (home cage, handling, open field, sensory, neuromuscular and physical observations), locomotor activity, clinical pathology parameters or organ weights. There were no test article-related macroscopic or microscopic changes observed.
Conclusions	Based on the results of this study, there was no evidence of test article-related toxicity of CAS# 68784-17-8 when administered orally (gavage) to Crl:CD(SD) rats for 28 days. Therefore, the no-observed-effect level (NOEL) was 1000 mg/kg/day, the highest dosage level examined. Despite lower then desired concentrations in the low- and mid-dose formulations, the high-dose group (1000 mg/kg/day) was administered protocol-specified doses throughout the study and was also the no observed effect level for the study. No adverse effects would be expected to occur at doses below 1000 mg/kg/day
Data Quality	(1) Reliable without restriction.
References	Unpublished confidential business information WIL-186050
Other	Revised 3/28/2007

4.3 Genetic Toxicity:

Robust Summary Group 9- GENTOX-1

Test Substance	
CAS #	68784-17-8
Chemical Name	Isooctadecanoic acid reaction products with TEPA
Remarks	Test material purity – 95% active 5% HRLBO
Method	
Method/Guideline followed	Similar to OECD Guideline 471
Test Type	Bacterial Reverse Mutation Assay
GLP (Y/N)	Y
Year (Study Performed)	1986
Test System	Salmonella typhimurium
Strains Tested	Salmonella typhimurium tester strains TA98, TA100, TA1535, TA1537
Exposure Method	Plate incorporation
Test Substance Doses/concentration levels	0.1, 0.33, 1.0, 3.3, and 10 mg/plate with and without activation
Metabolic Activation	With and without (S9 fraction mix of livers of Aroclor 1254 pretreated Sprague Dawley rats)
Vehicle	Acetone
Tester strain, activation status, Positive Controls and concentration level	TA98 +S9 2-aminoanthracene 2 ug/plate TA98 -S9 2-nitrofluorene 10 ug/plate TA100 +S9 2-aminoanthracene 2 ug/plate TA100 -S9 sodium azide 1 ug/plate TA1535 +S9 2-aminoanthracene 2 ug/plate TA1535 -S9 sodium azide 1 ug/plate TA1537 +S9 2-aminoanthracene 2 ug/plate TA1537 -S9 9-aminoacridine 50 ug/plate
Vehicle Control	Acetone
Statistical Analysis	Mean revertant colony count and standard deviation were determined for each dose point.
Dose Rangefinding Study	Yes
S9 Optimization Study	Yes
Dose confirmation	Yes
Remarks field for test conditions	This study was conducted prior to the development of OECD Guideline No. 471. This study deviates from the guideline in that Tester Strain E. coli WP2 urvA Tester Strain called for in the guideline was not included. There were two treatment sets for each tester strain, with (+S9) and without (-S9) metabolic activation. Each of the tester strains was dosed with five concentrations of test substance, vehicle control, and a positive control. Three plates/dose group/strain/treatment set were evaluated. 100 ul of test material, positive control or vehicle control were added to each

	plate along with 100 ul of tester strain, S9 mix (if needed) and 2.0-2.5 ml of top agar. This was overlaid onto the surface of minimal bottom agar in a petri dish. Due to unusual toxicity results observed in the first experiment, the amount of solvent/test material delivered to each plate was reduced to 50 ul in the second experiment. Plates were incubated for 48 hours at 37^{o}C. The numbers of revertant colonies were counted with an automated colony counter. The test material was considered positive if two consecutive dose levels (or the highest non-toxic dose level) produced responses at least twice (2.5 fold for TA1535 and 1537) that of the negative/solvent control and these dose levels exhibited a dose response. Study results were confirmed in a second independent assay.
Results	The test substance was not mutagenic in this assay with or without metabolic activation.
Remarks	The test material was completely miscible with acetone but was not completely miscible with the top agar at > 0.1 mg/plate. In the first experiment, in which the test material or solvent was delivered at 100 ul/plate, cytotoxicity was observed in TA 98, 100 and 1535 (1 and 3.3 mg/plate) and TA1537 (3.3 mg/plate) with metabolic activation. Test material precipitation occurred at all dose levels and interfered with cytotoxicity evaluations at the highest dose tested (10 mg/plate). Precipitation with little or no cytotoxicity was observed at all concentrations tested in the second experiment. No reproducible increases in mutation frequency were observed in any tester strain with or without metabolic activation. The positive control for each respective test strain exhibited an appropriate response (with or without S9) over the mean value of the vehicle control for a given strain, confirming the expected positive control response.
Conclusions	Under the conditions of this study, the test material was not mutagenic.
Data Quality	(1) Reliable without restriction.
References	Unpublished confidential business information
Other	Updated: April 3, 2003

Robust Summary Group 9: GENTOX-2

Test Substance	
CAS #	CAS# 68784-17-8
Chemical Name	Isooctadecanoic acid reaction products with TEPA
Remarks	Test material purity: 100%
Method	
Method/Guideline followed	OECD Guideline 473
Test Type	In Vitro Chromosomal Aberration Assay
GLP (Y/N)	Y
Year (Study Performed)	2006
Test System	Human peripheral blood lymphocytes
Exposure Method	Dilution
Test Substance concentration levels	Definitive Assay: 4 hour treatment, 20 hour harvest without activation: 0.313, 0.625*, 1.25*, 2.5*, 5.0, 7.5, 10 µg/mL 4 hour treatment, 20 hour harvest with activation: 0.313, 0.625*, 1.25*, 2.5*, 5.0, 7.5, 10 µg/mL 20 hour treatment, 0 hour harvest without activation: 0.313, 0.625*, 1.25*, 2.5*, 5.0, 7.5, 10 µg/mL *Concentrations evaluated for chromosome aberrations.
Metabolic Activation	With and without S9 fraction mix of livers of Aroclor 1254 pretreated Sprague Dawley rats and cofactor mix (magnesium chloride, potassium chloride, glucose-6-phosphate, NADP).
Vehicles	Ethanol
Vehicle and Positive Control concentration levels by activation status	Mitomycin C - non-activated test system positive control (0.3 or 0.6 µg/mL) Cyclophosphamide - activated test system positive control (20 or 40 µg/mL) Ethanol – solvent control
Statistical Analysis	Positive control groups were compared to vehicle control by Fisher Exact Test. Differences between control and treated groups were compared using Fisher Exact Test. The Cochran-Armitage assay was used to test for dose response.
Test Substance Solubility	Test substance solubility in the vehicle was determined.
Preliminary Toxicity Dose Range Finding Assay	Performed to select concentrations for the chromosome aberration assay. Consisted of an evaluation of test article effect on mitotic index. Evaluation performed at 4 hours with and without activation and at 20 hours without activation at concentrations ranging from 0.5 to 5000 µg/mL.
Remarks field for test conditions	Prior to study initiation the solubility of the test substance and of the positive control materials in the vehicle (ethanol) was confirmed. A pretest dose range finding study was conducted at concentrations up to 5000 ug/mL with and without metabolic activation. In the main study there were two treatment sets for each concentration of test substance, with (+S9) and without (-S9) metabolic activation. Mitomycin C (positive control) was tested without activation and Cyclophosphamide (positive control) was tested with activation. Prepared cultures were treated with test substance or control material and were incubated for 4 (activated and non-activated) or 20

	hours (non-activated). Two hours prior to harvest the spindle inhibitor, Colcemid, was added to each culture to obtain a final concentration of 0.1 ug/mL. Two hours after the addition of Colcemid harvested cells were evaluated microscopically for percent confluency, morphology and estimated number of mitotic cells prior to harvest. Slides were prepared using Giemsa stain. Two slides/treatment group were evaluated. 200 metaphase cells (100 per culture) each containing 46 centromeres were scored. Chromosomes were counted for each cell. Chromosome aberrations, either chromosome or chromatid type were recorded. Chromatid and isochromatid gaps were presented in the data but were not included in the total percentage of cells with one or more aberrations or in the frequency of structural aberrations per cell. The percent of aberrant cells and the frequency of aberration (%) per treatment group were determined. A test substance is considered to have induced a positive response compared to vehicle control when the percentages of cells with aberrations were increased in a dose-responsive manner with one or more concentrations being statistically elevated relative to the solvent control group. A reproducible significant increase at the high dose only with no dose response or a reproducible significant increase at one dose level other than the high dose with no dose response was considered positive. The test article was considered negative if no statistically significant increase was observed relative to the solvent control.
Results	Under the conditions of this study the test material was negative for the induction of structural and numerical chromosome aberrations in human peripheral blood lymphocytes.

Remarks	In the solubility evaluation ethanol was determined to be the solvent of choice based on the solubility of the test material at a concentration of 500 mg/mL. In the pretest toxicity assay substantial toxicity was observed (at least a 50% reduction in mitotic index compared to the solvent control) at >5 µg/mL in all three treatment groups. Mitotic inhibition was 55% at 2.5 µg/mL in the non-activated 4-hour exposure group. The doses selected for the analysis of chromosome aberrations were 0.625, 1.25 and 2.5 µg/mL. The percentage of cells with structural or numerical aberrations in the test article groups was not significantly increased above the solvent control at any dose level. The percentage of structurally damaged cells in the positive control group was statistically significant. Mitotic inhibition was 53% at 2.5 µg/mL in the activated 4-hour exposure group. The doses selected for the analysis of chromosome aberrations were 0.625, 1.25 and 2.5 µg/mL. The percentage of cells with structural or numerical aberrations in the test article groups was not significantly increased above the solvent control at any dose level. The percentage of structurally damaged cells in the positive control group was statistically significant. Mitotic inhibition was 57% at 2.5 µg/mL in the non-activated 20-hour exposure group. The doses selected for the analysis of chromosome aberrations were 0.625, 1.25 and 2.5 µg/mL µg/mL. The percentage of cells with structural or numerical aberrations in the test article groups was not significantly increased above the solvent control at any dose level. The percentage of structurally damaged cells in the positive control group was statistically significant. Positive and vehicle control group responses were as expected.
Conclusions	Under the conditions of this study the test material was negative for the induction of structural and numerical chromosome aberrations in human peripheral blood lymphocytes.
Data Quality	Reliable without restriction (Klimisch Code)
References	Unpublished confidential business information; BioReliance Study AB24HU.341.BTL
Other	Updated: 1/08/2008

4.4 REPRODUCTIVE/DEVELOPMENTAL TOXICITY

Robust Summary Group 9: REPRO/DEV-1

Test Substance	
CAS #	CAS# 68784-17-8
Chemical Name	Isooctadecanoic acid reaction products with TEPA
Remarks	Test material purity 100%
Method	
Method/Guideline	OECD Guidelines 421
Test Type	Reproduction/developmental screening study in rats
GLP (Y/N)	Y
Year (Study Performed)	2006
Species	Rat
Strain	Crl:CD rats, approximately 75 days of age at initiation of treatment
Route of administration	Orally by gastric intubation
Duration of test	F0 males: 14 day premating period plus mating and postmating periods (43 doses total). F0 female: 14 day premating period through day 3 of lactation (39-43 doses total).
Dose levels	0, 150, 450 and 1000 mg/kg/day
Dose Selection	Doses were selected based on the results of previous studies.
Vehicle control	Corn oil
Dose volume	5 mL/kg
Sex	Males and females
Frequency of treatment	Once/day, 7 days/week
Analytical confirmation of concentration.	Homogeneity, stability and dose concentration confirmation.
Control and treatment groups	12/sex/group
Post exposure recovery period	None
Mating ratio	One male to one female
Duration of mating period	Up to 14 days with the same male
Statistical methods	ANOVA, Dunnett's, Kruskal-Wallis, Chi-square as appropriate.

Remarks field for test conditions	Viability and Toxicity: Twice daily Clinical Observations: Individual detailed clinical observations were recorded weekly (prior to test article administration). Each male and female was also observed for signs of toxicity at the time of dose administration and approximately 1-2 hours following dose administration. Body Weights: Individual male body weights were recorded weekly throughout the study and prior to the scheduled euthanasia. Individual female body weights were recorded weekly until evidence of copulation was observed. Once evidence of mating was observed, female body weights were recorded on gestation days 0, 4, 7, 11, 14, 17 and 20 and on lactation days 1 and 4. Food Consumption: Individual food consumption was recorded on the corresponding weekly body weight days until pairing. Food intake was not recorded during the mating period. Once evidence of mating was observed, female food consumption was recorded on gestation days 0, 4, 7, 11, 14, 17 and 20 and on lactation days 1 and 4. Following mating, food consumption for the female with no evidence of mating and for all males was measured on a weekly basis until the scheduled euthanasia. Breeding Procedures: The animals were paired on a 1:1 basis within each treatment group following 14 days of treatment for the males and females. Each female was housed in the home cage of the male. Positive evidence of mating was confirmed by the presence of a vaginal copulatory plug or the presence of sperm following a vaginal lavage. Each mating pair was examined daily. The day when evidence of mating was identified was termed gestation day 0. If evidence of copulation was not detected after 14 days of pairing, any females that had not shown evidence of mating were placed in maternity cages. Parturition: All females were allowed to deliver naturally and rear their young to postnatal day 4 (PND 4). During the period of expected parturition, the females were observed twice daily for initiation and completion of parturition and for signs of dystocia. On the day parturition was initiated (PND 0), pups were sexed and examined for gross malformations, and the numbers of stillborn and live pups were recorded. Individual gestation length was calculated using the date delivery started. Macroscopic Examinations (F0): All F0 adults were euthanized by carbon dioxide inhalation. Males were euthanized on the last day of the female lactation day 4 necropsies. Females that delivered were euthanized on lactation day 4; the numbers of former implantation sites and corpora lutea were recorded. Females that failed to deliver were euthanized on post-mating day 25 (females with evidence of mating) or post-cohabitation day 25 (females with no evidence of mating). Uteri with no macroscopic evidence of implantation were opened and subsequently placed in 10% ammonium sulfide solution for detection of early implantation loss. Necropsy included examination of the external surface, all orifices and the cranial cavity, the external surface of the brain and the thoracic,

	abdominal and pelvic cavities, including viscera. Select organs were weighed and select tissues were preserved. Microscopic Examinations (F0): Microscopic examination was performed on select tissues from all F0 animals in the control and 1000 mg/kg/day groups at the scheduled necropsies; internal gross lesions from all groups were examined. Pup/Litter Examinations: Litters were examined daily for survival and any adverse changes in appearance or behavior. A daily record of litter size was maintained. Standardization of litter size was not performed because the pups were euthanized on PND 4. Intact offspring dying were necropsied using a fresh dissection technique including the heart and major vessels. Pups found dead on PND 0 or 1 had the lungs removed and placed in a saline-filled jar. If the lungs sank to the bottom of the jar, the pup was considered stillborn. If the lungs floated, the pup was considered to be found dead. The carcass of each pup was then discarded. Each pup received a detailed physical examination on PND 1 and 4. Any abnormalities in nursing behavior were recorded. Individual Pup Body Weights and Sex: Pup weights and sex wererecorded on days 1 and 4 of lactation. Necropsy (F1): On PND 4, surviving F1 rats were euthanized via an intraperitoneal injection of sodium pentobarbital. Gross lesions observed at the detailed necropsy examinations on PND 4 were preserved in the appropriate fixative for possible future examination.
Results	All males and females survived to the scheduled necropsy. Test article-related, non-adverse clinical findings (salivation or evidence thereof) were noted in the 150, 450 and 1000 mg/kg/day group males and the 1000 mg/kg/day group females at the time of dose administration. These findings did not persist to 1-2 hours following dose administration. No test article-related effects on F0 male body weights, body weight gains or food consumption were observed during the study at any dosage level. F0 female mean body weights, body weight gains and food consumption were similar to those in the control group during the pre-mating, gestation and lactation periods. No test article-related effects on F0 organ weights (absolute, relative to final body weight or relative to brain weight) were observed in the 150, 450 and 1000 mg/kg/day group males and females. There were no test article-related macroscopic findings observed at any dosage level, and no test article-related

	microscopic findings were observed in the 1000 mg/kg/day group males and females. The mean numbers of corpora lutea, implantation sites and unaccounted-for sites in the 150, 450 and 1000 mg/kg/day groups were unaffected by test article administration. F0 male and female reproductive performance was unaffected by test article administration in the 150, 450 and 1000 mg/kg/day groups. The mean numbers of days between pairing and coitus in these groups was similar to the control group. No test article-related effects on mean gestation lengths were noted at any dosage level; there were no signs of dystocia. No test article-related effects on the mean numbers of pups born, live litter size on PND 0, the percentage of males at birth or postnatal survival were observed in the 150, 450 and 1000 mg/kg/day groups. The general physical condition of the pups and mean pup body weights and body weight gains were unaffected by administration of the test article to the parental animals. No test article-related findings were observed at the necropsy of pups that were found dead.
Conclusions	Under the conditions of this screening study, there were no effects on survival, body weights, food consumption, organ weights, macroscopic or microscopic evaluations and functional reproductive outcome in the F0 males and females at any dosage level, a dosage level of 1000 mg/kg/day, the highest level tested, was considered to be the no observed-adverse-effect level (NOAEL) for systemic and reproductive toxicity of 68784-17-8 when administered orally by gavage to Crl:CD(SD) rats. The NOAEL for neonatal toxicity was 1000 mg/kg/day based on the lack of effects on postnatal survival, physical condition and body weights at any dosage level.
Data Quality	(1) Reliable without restriction.
References	Unpublished confidential business information (WIL Study No.: WIL-186051
Other	Updated: 2/18/2007